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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/002,954	10/23/2001	Geoffrey B. Rhoads	P0477	4464

23735 7590 02/05/2004

DIGIMARC CORPORATION
19801 SW 72ND AVENUE
SUITE 100
TUALATIN, OR 97062

EXAMINER

BLACKMAN, ANTHONY J

ART UNIT	PAPER NUMBER
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2676

DATE MAILED: 02/05/2004

14

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/002,954

Applicant(s)

RHOADS ET AL.

Examiner

ANTHONY J BLACKMAN

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 November 2003.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 3-18, 41-45 and 48-50 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 3-6 is/are allowed.
- 6) ☒ Claim(s) 7-18, 41-45 and 48-50 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☒ Other: *Reasons for Allowance*.

DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested:

USING EMBEDDED/WATERMARKING/STEGANOGRAPHIC IDENTIFIERS FOR
EACH SEGMENTED AREA OF GEOGRAPHIC/TOPOGRAPHIC
MAPS/IMAGES/PHOTOS CHARACTERISTICS CORRESPONDING TO THE IMAGERY
DATA DERIVED FROM AERIAL PLATFORMS.

Allowable Subject Matter

2. The following is an examiner's statement of reasons for allowance for claims 3-6:
none of the prior art expressly teach or suggest *digitally watermarking the image data to include imagery characteristics corresponding to the image data, correlating the image data based on the imagery characteristics; and generating a map from the correlated image data*. Examiner interprets NARYANASWAMI et al, US Patent No. 6,504,571 to disclose a method of compiling aerial imagery because use of a camera elevated above ground level provides aerial imagery 100 capture (column 8, lines 6-21) as claimed;
a map from the captured imagery may be compiled from the "image database 216" (column 8, line 54). It is inherent that the "digital images stored in the memory 108" are

also stored in the "image database 216" and the images of the image database, are indexed by parameters (column 7, lines 25-47), and these parameters extracted from the image database correspond to maps.

Further "...a watermarking method allows the recorded parameters (column 7, lines 25-47) to be watermarked into every captured image (column 8, lines 14-16)", however, does not expressly teach or suggest the following features;

"...digitally watermarking the image data to include imagery characteristics corresponding to the image data, correlating the image data based on the imagery characteristics; and generating a map from the correlated image data."

HENDRICKSON et al, US Patent No. 6,529,615 also disclose aerial photographing means, segmenting aerial photographed images and then "piecing the photographs together to form a composite of the field [photographs/images/maps] (column 11, lines 35-39)." However, does not disclose use of watermarking/embedding/steganographic processing. Therefore, because neither NARAYANASWAMI et al nor HENDRICKSON et al, either alone or in combination reasonably suggest *digitally watermarking the image data to include imagery characteristics corresponding to the image data, correlating the image data based on the imagery characteristics; and generating a map from the correlated image data*, claims 3-6 meet necessary conditions for allowance.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably

accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Response to Arguments

3. Applicant's arguments filed 11/10/03 have been fully considered but they are not persuasive. Examiner interprets the prior art to read upon claims 7-18 and 41-50.

Regarding claim 7, examiner interprets prior art differently from view of applicants in that applicant feels that the prior art does not teach storing a range of watermarked indexes. It is inherent that the "digital images stored in the memory 108" are also stored in the "image database 216" and the images of the image database, are indexed by parameters (column 7, lines 25-47), and these parameters extracted from the image database correspond to maps. Therefore, the watermarked images, including "...the recorded parameters to be watermarked into every captured image... (column 8, lines 6-19)" teach storing a range of watermarked indexes.

Regarding claim 9, examiner interprets prior art differently from view of applicants in that applicant feels that the prior art does not teach "piecing together" the plurality of image patches based at least in part on the encoded location indicator. Image retrieval means is disclosed in Column 3, lines 5-50 disclose prior art advances prior to US Patent 6,504,571 and further advanced by US Patent 6,504,571 at least at column 4, lines 2-6, 19-23, 24-31 and most notably at lines 32-41.

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Regarding claim 15, examiner interprets prior art differently from view of applicants in that applicant feels that the prior art does not teach modifying watermarked data through modification of an image, but not modifying imagery data based on embedded imagery characteristics. The modified embedded imagery characteristics are interpreted by examiner to correspond to the explanation of claim 9 of means for generating a map of a specified geographic location data at least at column 4, lines 2-6, 19-23, 24-31 and most notably at lines 32-41 because the piecing together means is a modification means. Until claim language more explicitly defines the means of modification examiner maintains use of prior art.

Regarding claim 41, examiner interprets prior art differently from view of applicants in that applicant feels that the prior art does not teach embedding the first geolocation only in the first region. NARAYANASWAMI et al embeds/watermarks the first geolocation only in the first region when there is not a set of plurality of parameters (column 7, lines 25-46) queried, for example, when using the parameters. It is inherent that each geolocation (at least, i.e., location data, meaning longitude and latitude) will correspond to a single embedding means/watermark as claimed. Further, the reference does not disclose watermarking a single set of parameters more than once.

Regarding claim 45 and 50, examiner interprets prior art differently from view of applicants in that applicant feels that the prior art does not teach redundantly watermarking the first geovector information. Returning again to the "piecing together"

means of claim 9, the piecing together comprises a first geolocation/geovector data that becomes embedded/watermarked. As this first geolocation/geovector data that becomes embedded/watermarked is pieced together, the watermarking thus becomes redundant.

Examiner respectfully maintains utilization of NARATYANASWAMI et al as primary reference reading upon amended claims with the exception of claims 3-6, rendered allowable because due to the combination of the following features, "...suggest *digitally watermarking the image data to include imagery characteristics corresponding to the image data, correlating the image data based on the imagery characteristics; and generating a map from the correlated image data*".

Claim Rejections - 35 USC § 102

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 7-16, 18, 41-45 and 48-50 are rejected under 35 U.S.C. 102(e) as being anticipated by NARAYANASWAMI et al, US Patent No. 6,504,571.

5. As per claim 7, examiner interprets NARAYANASWAMI et al to teach "... A method of managing aerial imagery (disclose a method of compiling aerial imagery because use of a camera elevated above ground level provides aerial imagery 100 capture (column 8, lines 6-21) as claimed) comprising:

watermarking patches of the aerial imagery (figure 1, elements 100, 134, figure 2, element 216 and column 8, lines 6-21 and 40-47), wherein each patch includes at least one watermark (figure 1, elements 100, 134, figure 2, element 216 and column 8, lines 6-21 and 40-62), the at least one watermark including an index (figures 2 and 3 [querying means inherently disclose indexing and databases]);

storing in a database a plurality of data records corresponding to a range of watermark indexes, wherein the data records comprise imagery characteristics (figure 1, elements 100, 134, figure 2, element 216 and column 8, lines 6-21 and 40-62).

6. As per claim 8, examiner interprets NARAYANASWAMI et al to meet limitations of claim 7, and further teach wherein said imagery characteristics comprise at least one of scale', rotation, altitude, attitude, resolution, time, imaging device type, and skew (column 3, lines 55-65 applies at least to the underlined term).

7. As per claim 9, examiner interprets NARAYANASWAMI et al ((column 3, lines 6-50, column 4, lines 2-41, figures 2 and 3) to disclose the following;

a method of generating a geo-spatial map comprising:
steganographically encoding data in the form of a digital watermark component in each of a plurality of image patches, said encoded data including a location indicator; and
piecing together the plurality of image patches based at least in part on the encoded location indicators indicate to provide a geo-spatial map including the plurality of image patches.

8. As per claim 10, examiner interprets NARAYANASWAMI et al to meet limitations of claim 9 and examiner interprets NARAYANASWAMI et al (column 3, lines 6-50, column 4, lines 2-41, figures 2 and 3) to disclose the following limitations, wherein the location indicator identifies the geo-coordinates of its respective image patch, with each of the plurality of image patches including a unique location identifier representing unique geo-coordinates.

9. As per claim 11, examiner interprets NARAYANASWAMI et al to meet limitations of claim 10 and examiner interprets NARAYANASWAMI et al (column 3, lines 6-50, column 4, lines 2-41, figures 2 and 3) to disclose the following limitations, wherein at least one of the location indicators identifies the geo-coordinates for at least one corner of its respective patch.

10. As per claim 12, examiner interprets NARAYANASWAMI et al to meet limitations of claim 10 and examiner interprets NARAYANASWAMI et al (column 3, lines 6-50, column 4, lines 2-41, figures 2 and 3) to disclose the following limitations, wherein the location indicator identifies a respective patch location relative to the map.

11. As per claim 13, examiner interprets NARAYANASWAMI et al to meet limitations of claim 9 and examiner interprets NARAYANASWAMI et al (column 3, lines 6-50, column 4, lines 2-41, figures 2 and 3) to disclose the following limitations, wherein the

location indicator identifies the respective patch location within the geo-spatial map relative to at least one adjacent patch.

12. As per claim 14, examiner interprets NARAYANASWAMI et al to meet limitations of claim 9 and examiner interprets NARAYANASWAMI et al (column 3, lines 6-50, column 4, lines 2-41, figures 2 and 3) to disclose the following limitations, wherein the location indicator comprises an index, and said method further comprises the step of indexing a database with the index to retrieve location information.

13. As per claim 15, examiner interprets NARAYANASWAMI et al (column 3, lines 6-50, column 4, lines 24-40 [at least inherent satellite imagery], column 8, lines 40-62, column 9, lines 33-40, column 10, lines 48-61, column 11, line 12-column 12, lines 22 [at least inherent satellite imagery]) disclose a method of correlating imagery data generated under a plurality of different conditions, said method comprising: embedding imagery characteristics in the imagery data (figure 1, elements 100 and 134, column 8, lines 6-21, it is inherent that the watermarking means bears similar results to embedding means); and modifying the imagery data based on the embedded imagery characteristics so as to standardize at least some of the imagery data (column 4, lines 2-6, 19-23, 24-31, column 8, lines 6-21 [wherein at least verifying the authenticity of the pictures inherently bears similar results to the standardization means]).

14. As per claim 16, examiner interprets NARAYANASWAMI et al to meet limitations of claim 15 and also discloses (column 3, lines 55-65) to meet, wherein said conditions comprise at least one of aerial platforms, altitude, time, cloud cover, resolution and scale.

15. As per claim 18, examiner interprets NARAYANASWAMI et al to meet limitations of claim 15 and also discloses (column 3, lines 55-65 – at least suggest the underlined time element) to meet, wherein said imagery characteristics comprise an index which is used to identify at least one of scale, rotation, altitude, attitude, resolution, time, imaging device type, and skew.

16. As per claim 41, examiner interprets NARAYANASWAMI et al (column 3, lines 6-50 and column 4, lines 2-41) to disclose A method of making a map (the following cites address the remaining limitations of claim 41 as recited - column 7, lines 25-46, column 8, lines 6-21. Note: please refer to response to arguments in section 3 of this office action)

comprising: obtaining first geolocation information corresponding to at least a first region to be depicted by the map; and digitally watermarking the first geolocation information in the map, wherein said watermarking step comprises embedding the first geolocation information only in the first region.

17. As per claim 42, examiner interprets NARAYANASWAMI et al to meet limitations of claim 41 and the following cite (column 7, lines 25-46 and column 8, lines 6-21 discloses the following limitations and please refer to response to arguments in section 3 of this office action), further comprising obtaining second geolocation information corresponding to at least a second region to be depicted by the map and digitally watermarking the second geolocation information in the map.

18. As per claim 43, examiner interprets NARAYANASWAMI et al to meet limitations of claim 42 and the following cite (column 7, lines 25-46 and column 8, lines 6-21 discloses the following limitations and please refer to response to arguments in section 3 of this office action), wherein said the second geolocation information is only embedded in the second region.

19. As per claim 44, examiner interprets NARAYANASWAMI et al to meet limitations of claim 41 and the following cite (column 7, lines 25-46 and column 8, lines 6-21, column 3, lines 6-50, column 5, line 60-column 6, line 4, column 9, lines 5-66, includes at least the following underlined features), wherein the first region comprises at least one of a fire hydrant, tree, road, building, lake, stream, forest, manhole, water line, gas line, power line, park, property line, fence, boarder, depot, geographical area, stadium, hospital, school, church, store and airport.

20. As per claim 45, examiner interprets NARAYANASWAMI et al to disclose a method of making a map (column 2, lines 1-5, column 3, lines 6-50, column 4, lines 32-41) comprising:

obtaining first geovector information corresponding to at least a first region to be depicted by the map (column 2, lines 1-5, column 3, lines 6-50, column 4, lines 32-41, column 7, lines 25-46, column 8, lines 6-21, please refer to section 3 of this office action); and

digitally watermarking the first geovector information in the map, wherein said watermarking step comprises digitally watermarking the first geovector information redundantly throughout the map (column 2, lines 1-5, column 3, lines 6-50, column 4, lines 32-41, column 7, lines 25-46, column 8, lines 6-21, please refer to section 3 of this office action).

21. As per claim 48 examiner interprets NARAYANASWAMI et al to disclose a method of steganographically marking image captured from an aerial platform disclose a method of compiling aerial imagery because use of a camera elevated above ground level provides aerial imagery 100 capture (column 8, lines 6-21) as claimed, said method (disclosed at the following cites also meets the following limitations of claim 48 - (column 7, lines 25-46 and column 8, lines 6-21 and 40-62, please refer to section 3 of this office action); comprising:

obtaining first geolocation information corresponding to a first region depicted in the imagery captured from the aerial platform (disclose a method of compiling aerial imagery because use of a camera elevated above ground level provides aerial imagery 100 capture;

embedding the first geolocation information in the first region in the form of a digital watermark;

obtaining second geolocation information corresponding to at least a second region depicted in the imagery captured from the aerial platform; and

embedding the second geolocation information in the imagery captured from the aerial platform in the form of a digital watermark.

22. As per claim 49 examiner interprets NARAYANASWAMI et al (column 7, lines 25-46 and column 8, lines 6-21 and 40-62, please refer to section 3 of this office action); to meet limitations of claim 48 and claim 49 as follows, wherein the second geolocation information is embedded only in the second region.

23. As per claim 50, examiner interprets NARAYANASWAI et al to steganographically marking imagery captured from an aerial platform disclose a method of compiling aerial imagery because use of a camera elevated above ground level provides aerial imagery 100 capture (column 8, lines 6-21) as claimed, said method (disclosed at the following cites also meets the following limitations of claim 48 - (column 7, lines 25-46 and column 8, lines 6-21 and 40-62, please refer to section 3 of

this office action) comprising: obtaining first geolocation information corresponding to a first region depicted in the imagery captured from the aerial_platform embedding the first geolocation information in the imagery captured from the aerial platform in the form of a digital watermark, wherein the first geolocation information is redundantly embedded in the imagery captured from the aerial platform.

Claim Rejections - 35 USC § 103

24. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

25. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over NARAYANASWAMI et al, US Patent No0, 6,504,571 in view of WANG et al, US Patent No. 6,526,155.

26. As per claim 17, examiner interprets NARAYANASWAMI et al to meet limitations of claim 15, and suggest said imagery characteristics comprising at least one of scale, rotation, altitude, attitude, resolution, time, imaging device type, and skew.

(column 3, lines 55-65 for the at least underlined features),

however, NARAYANASWAMI et al does not expressly teach wherein said imagery characteristics affect a spatial domain representation of the imagery data. WANG et al suggest the feature lacking above by modifying watermarked image areas with at least

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variable gray-scale range (column 4, lines 4-10, 11-column 5, line 9). It would have been obvious to one skilled in the art at the time of the invention to utilize the at least modifying watermarked image areas with at least variable gray-scale range of WANG et al to modify the method for querying digital image archives including a watermarking means for each captured image of NARAYANASWAMI et al because both inventions share similar technological environments corresponding to at least watermarking image data related to the processing of variably placed watermarking signals (see NARAYANASWAMI et al column 4, lines 6-19 and see WANG et al column 4, line 60-column 5, line 9).

Conclusion

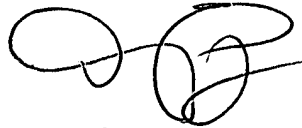
Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANTHONY J BLACKMAN whose telephone number is 703-305-0833. The examiner can normally be reached Monday through Friday between the hours of 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MATTHEW BELLA can be reached on 703-308-6829. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9314.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.



ANTHONY J BLACKMAN
Examiner
Art Unit 2676



MATTHEW C. BELLA
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